

REMARKS

Applicant respectfully requests that the foregoing amendments be made prior to examination of the present application.

In the Specification, a Substitute Specification under 37 C.F.R. § 1.125 has been provided to replace the originally filed specification for clarity. No new matter has been added.

Claims 1-33 are requested to be cancelled without prejudice to further the prosecution on the merits. Claims 34- 70 are being added.

After amending the claims as set forth above, Claims 34-70 are now pending in this application.

Applicant believes that the present application is now in condition for allowance. Favorable consideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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Vehicle Component and Method [for the] of treat[ment]ing [of] cover[ing] material[s for interior fitting pieces, in particular for motor vehicles, and interior fitting piece] for use with a Vehicle Component

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CROSS-REFERENCE TO RELATED PATENT APPLICATIONS

10 The present Application claims the benefit of priority to the following international Applications: PCT Patent Application No. PCT/EP03/05689 titled “Method for the Treatment of Covering Materials for Interior Fitting Pieces in Particular for Vehicle Interiors and Interior Fitting Pieces” filed on May 30, 2003 which published under PCT Article 21(2) on December 18, 2003 as WO 03/1034574 A2 in the German language and German Patent Application No. 102 25 084.7 filed on June 5, 2002 (which are hereby incorporated herein by reference in their entirety).

15 **[Description] FIELD**

20 The invention relates generally to a method for the treatment of covering materials of vehicle interior fitting pieces[,]; and in particular, to a method for the treatment of covering materials suitable for use with pieces of trim or seats of a motor vehicle, in which the moisture content of the covering material is temporarily increased[,]. The invention further relates to [and to] a vehicle interior fitting piece treated by this method.

25 **[Prior art] BACKGROUND**

30 A method of the generic type is generally known in practice. For example, it is known to subject a vehicle seat to a manual treatment with steam after assembly of the metal structures, the upholstering thereof and the covering of the upholstery with a covering material (for example woven fabric, knitted fabric or leather)[, the seats which are provided for installation in the interior of a motor vehicle are subjected to a manual treatment with steam]. For this purpose, a nozzle which is connected via a flexible tube to a mobile steam generator is placed onto those regions of the seat cover at which folds or creases have formed as they were being covered. Under the action of the steam and a mechanical treatment (ironing) 35 optionally taking place at the same time, the seat cover is smoothed. The seat is subsequently ready for installation in the motor vehicle.

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This generally customary procedure requires intensive use of labor and is furthermore associated with the risk that, with the local, intensive action of the steam, undesirable changes occur locally to the appearance of the seat cover.

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[Object]

10 Accordingly, it would be desirable to provide a method capable [The invention is based on the object] of bringing about a uniform treatment of the seat cover with little outlay.

[Achievement] SUMMARY

15 According to one exemplary embodiment, a method of treating a cover material for use with an interior vehicle component includes the steps of placing a cover material into a treatment chamber for moistening, moistening the cover material in the treatment chamber to soften the cover material, and smoothing the cover material by providing a drawing force that extends the cover material.

20 According to a further embodiment, a method of treating a cover material for use with an interior vehicle component includes the steps of providing a cover material, identifying the cover material, selecting treatment parameters that are suitable for the treatment of the cover material, placing the cover material into a treatment chamber, and moistening the cover material in the treatment chamber.

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According to a further embodiment, a method of treating a cover material for use with an interior vehicle component includes the steps of providing a cover material, placing a cover material into a treatment chamber for moistening, determining the contour of the cover material, establishing a predetermined distance between a steam nozzle and the cover material, and moistening the cover material in the treatment chamber.

According to a further embodiment, an interior fitting piece is treated by any of the above mentioned methods such as seats, roof linings, and trim pieces for motor

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vehicles.

BRIEF DESCRIPTION OF THE DRAWING

FIGURE 1 is a schematic drawing illustrating a method of treating a cover material
5 according to an exemplary embodiment.

DETAILED DESCRIPTION

With reference to the FIGURE, a method is provided for the treatment of a cover material (e.g., a seat cover, covering material, etc.). The method is shown and
10 described as a method for the treatment of a cover material suitable for use with a vehicle component (e.g., vehicle seat, head restraint, arm rest, roof lining, dashboard, door and/or pillar trim, etc.); and in particular, to a method for the treatment of a cover material for use as a seat cover of a vehicle seat.

15 The method generally includes the steps of [The object is achieved according to the invention by the fact that, in a method of the generic type, the fibers of the covering material are] soften[ed]ing the fibers of the covering material in a treatment chamber 8 by the supply of moisture and [are] smooth[ed]ing the covering material by the action of a drawing force extending the covering material.

20 The moisture content of the covering material (e.g., the fibers of the covering material, etc.) after the moistening in [the] treatment chamber 8 is [preferably] between approximately 2 and 10% by weight, preferably approximately 5% by weight. In order to obtain an optimum treatment result, the moisture content of the
25 [fibers] covering material [can] may be measured (e.g., directly or indirectly), and the moistening can be [being] continued until a predetermined moisture content is reached.

30 The moistening in [the] treatment chamber 8 advantageously takes place at an air temperature of between approximately 100 to 150°C, preferably between approximately 125 and 130°C.

35 [In this case] According to a preferred embodiment, provision can be made for the surface temperature of the covering material (and/or an added-on accessory part[s]) to be measured and for the air temperature and/or the treatment time to be set in

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such a manner that a permissible temperature load is not exceeded. The addition of moisture to [the] treatment chamber 8 preferably takes place by the supply of steam, in particular water vapor. In this case, additives, in particular odorous substances, smoothing agents and/or stain-inhibiting addition agents can be added 5 to the steam.

[According to one preferred variant of the method,] The drawing force provided to smooth the covering material [is] may be produced by the depositing of the covering material onto an elastically compressible base, [in particular of] such as 10 (for example) an elastically deformable foam material. The covering material can either be moistened in [the] treatment chamber 8 after [it] the covering material is deposited onto the elastically compressible base or alternatively can be moistened in [the] treatment chamber 8 and only subsequently be deposited onto the base with elastic compression of the latter.

15 According to an exemplary embodiment, the method of treating the covering material further includes the step of drying the covering material. According to such an embodiment, the covering material is preferably dried after the moistening, in which case the moisture content of the [fibers] covering material after the drying 20 is to be between approximately 0 and 1.0% by weight, preferably between approximately 0.05 and 0.25% by weight.

In order to reduce the outlay on investment, provision may be made for the drying to take place in the same treatment chamber as the moistening (e.g., treatment 25 chamber 8). However, depending on the number of components to be treated, it [is] may be advantageous to carry out the drying in a second treatment chamber, shown as a second treatment chamber 11, following the treatment chamber for the moistening or to carry it out outside the treatment chamber. According to one particularly advantageous method, the moisture of the [fibers] covering material is 30 [directly or indirectly] measured (directly or indirectly) and the covering material is dried until a predetermined residual moisture is reached.

In order to rationalize the treatment, a plurality of cover[s]ing materials provided 35 for moistening can be grouped, if appropriate connected to the entire interior fitting piece, on a transport auxiliary device[, for example] such as (for example) a pallet, and can be supplied together to the treatment chamber.

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According to an exemplary embodiment, the method of treating a covering material may provide for a largely automatic operation of the treatment device, in particular with the treatment product (e.g., the covering material) continuously changing[.]. For example, the method may include the step of recognizing (e.g., identifying, etc.) [can be brought about by] the covering material to be treated in the treatment chamber (and/or an accessory part[s] to be treated at the same time in the treatment chamber as a consequence of being [directly or indirectly] connected (directly or indirectly) to said covering material). [being recognized,] Once recognized, [then] treatment parameters can be selected which are suitable for the treatment of the covering material, and/or an accessory part to be treated at the same time, [and/or which] (e.g., treatment parameters intended to avoid damaging, etc.). [the accessory parts to be treated at the same time being selected, and the covering material and/or accessory parts to be treated at the same time being treated] The method further includes the step of using the selected treatment parameters to treat the covering material, and/or an accessory part to be treated at the same time.

[In this case]To provide for the recognition of the covering material (and/or an accessory part) to be treated, the covering material, the accessory part[s] which are to be treated at the same time as the latter], and/or a transport auxiliary device (used if appropriate) [are advantageously] may be provided with means for identifying the covering material and/or the accessory part[s]. These identification means preferably permit automated recognition and comprise, for example, a bar code and/or a chip coding.

The method of treating a covering may further include the step of protecting regions of the covering material (and/or an accessory part) [In the case of interior fitting pieces which comprise components] having differing resistance to heat and moisture[.]. According one exemplary embodiment, [to] the moisture- and/or temperature-sensitive regions of the covering material (and/or an accessory part[s]) are [preferably] covered during the treatment in the treatment chamber. According to another exemplary embodiment, [Furthermore,] provision may be made for moisture- and/or temperature-sensitive regions of the covering material (and/or an accessory part[s]) to be protected during the treatment in the treatment chamber by localized reduction of the effect of treatment devices or to be brought into direct or indirect connection with said covering material only after treatment of the latter in the treatment chamber.

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The method of treating a cover material may further include the step of determining the contour of the cover material. The steam which is preferably used for the supply of the moisture can be introduced into the treatment chamber via nozzles, for example. By determining the contour of the covering material to be treated, [In this case, according to one preferred variant of the invention, the contour of the covering material to be treated can be determined,] a predetermined distance between the nozzles supplying the steam and the covering material can be set, and the covering material can then be treated in the treatment chamber.

According to one exemplary embodiment, the determination of the contour takes place[, for example,] by mechanical scanning of the covering material[.]. According to various alternative embodiments, the determination of the contour takes place [but alternatively also] without contact[, in particular] (e.g., using ultrasonic or laser sensors).

According to another exemplary embodiment, the method of treating a cover material may further include the step of subjecting the covering material [can advantageously additionally be subjected in the treatment chamber] to automatic mechanical processing, in particular by means of brushes or rollers.

[The object is furthermore achieved by an interior fitting piece for a motor vehicle, which interior fitting piece is treated by this method and in which an elastically compressible base, in particular of an elastically deformable foam material, is preferably arranged under the covering material. The interior fitting piece can comprise, for example, an elastically upholstered vehicle seat and/or elastically upholstered seat add-on parts (head restraints, arm rests or the like) with an upholstered cover, but also an extensive piece of trim for the vehicle interior with a rigid support, a covering material and an upholstered layer arranged between the support and covering material, in particular a roof lining, a door or pillar trim or a dashboard.]

[Figures]

FIGURE 1 [The single figure] illustrates, by way of example and schematically, a method sequence according to a preferred embodiment [the invention] using the example of treating vehicle seats.

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[The] Vehicle seats 1, which are already provided with [the] a seat cover (e.g., cover material, etc.) and can be seen in top view, are grouped and orientated, prior to the treatment, on a transport auxiliary device in the form of a pallet 2 which can 5 be moved through the manufacturing hall in the direction of the arrow A by means of a transport device 3. An identifier, shown as a programmable chip 4, in which information items about the particular product being transported are stored[, for example] (e.g., information items concerning the covering material used or about special fitting features of the vehicle seats 1)[,] is attached to the side of [the] pallet 10 2. These information items can be already used in order to direct preceding manufacturing sequences.

The information items stored in [the] chip 4 are read out by means of a reading device 5 and passed on to a computer 6 which, on the basis of them, selects 15 suitable values from previously stored treatment parameters[, for example] (e.g., treatment parameters for temperature, air moisture or treatment duration)[,] and passes [them] the treatment parameters onto a steam generator 7 (phase A). [The] Pallet 2 is then transported into a first treatment chamber 8 in which the contour of [the] vehicle seats 1 is established by means of ultrasonic sensors 9. The measured 20 values are likewise passed on to [the] computer 6 which subsequently moves [the] steam nozzles 10 (which can be displaced by motor) to a predetermined distance in front of [the] vehicle seats 1. In [the] treatment chamber 8, the treatment of the covering material by a temporary increase in its moisture content now takes place by means of the supply of a heated air/steam mixture from [the] steam generator 7, 25 the fibers softening by the supply of moisture (phase B). By the action of a drawing force which extends the covering material and is generated by the compression of the seat cushion and the application, which is associated therewith, of tensile stresses into the covering material, an automatic smoothing process takes place.

30 After the treatment time provided for the treatment of [the] vehicle seats 1 concerned finishes, [the] pallet 2 is conveyed further into a further treatment chamber 11 (phase C) in which the covering material and [the] vehicle seats 1 are dried in their entirety. For this purpose, hot air is blown into [the] treatment 35 chamber 11 by means of a fan 12 and a heating system 13, said hot air escaping again on the opposite side of [the] treatment chamber 11 via an outlet connection 14. Arranged in [the] outlet connection 14 is a moisture sensor 15 which measures

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the moisture content of the escaping air and passes it on to a computer 16. The drying process is ended only when the measured moisture has reached a predetermined value. [The] Pallet 2 is subsequently moved out of [the] treatment chamber 11 (phase D). [The] Vehicle seats 1 can now be conveyed further for 5 installation into the associated motor vehicle.

According to an exemplary embodiment, a vehicle component (e.g., an interior fitting piece for use in a motor vehicle, etc.) is provided that is treated by any of the above described methods. [The object is furthermore achieved by an interior fitting piece for a motor vehicle, which interior fitting piece is treated by this method and in which an elastically compressible base, in particular of an elastically deformable foam material, is preferably arranged under the covering material.] The [interior fitting piece] vehicle component can comprise, for 10 example, an elastically upholstered vehicle seat and/or elastically upholstered seat add-on parts (head restraints, arm rests or the like) with an upholstered cover, but also an extensive piece of trim for the vehicle interior with a rigid support, a covering material and an upholstered layer arranged between the support and 15 covering material, in particular a roof lining, a door or pillar trim or a dashboard.]

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[Reference numbers

- 1 Vehicle seat
- 2 Pallet
- 3 Transport device
- 4 Chip
- 5 Reading device
- 6 Computer
- 7 Steam generator
- 8 Treatment chamber
- 9 Ultrasonic sensor
- 10 Steam nozzle
- 11 Treatment chamber
- 12 Fan
- 13 Heating system
- 14 Outlet connection
- 15 Moisture sensor
- 16 Computer]